

**What is claimed is:**

1. A method for reproducing contents information in an interactive optical disc device,  
comprising the steps of:

5 a) synchronizing and reproducing data read from an interactive optical disc and  
contents information sent and downloaded from a contents provider server connected via the  
Internet;

b) if the sending of said contents information from said contents provider server is  
suspended or delayed, generating a command for requesting re-sending of specific contents  
10 information, with reference to specific information contained in normally reproduced last  
contents information, and sending the generated command to said contents provider server; and

c) reproducing said specific contents information re-sent from said contents provider  
server in response to said command together with data read from said interactive optical disc  
while re-synchronizing it with said data read from said interactive optical disc.

15 2. The method as set forth in claim 1, wherein said specific information contained in  
said normally reproduced last contents information includes at least one of playback time  
information, contents information offset information, and offset information of said data read  
from said interactive optical disc.

20 3. The method as set forth in claim 2, wherein said step b) includes the steps of:

b-1) checking said specific information contained in said normally reproduced last  
contents information if the sending of said contents information from said contents provider

server is suspended or delayed;

b-2) calculating information regarding re-synchronizable contents information based upon said checked specific information; and

b-3) generating a command for requesting re-sending of specific contents information  
5 corresponding to the calculated information regarding said re-synchronizable contents information and sending the generated command to said contents provider server.

4. The method as set forth in claim 3, wherein said information regarding said re-synchronizable contents information is calculated with reference to a bandwidth of a current  
10 network bit rate.

5. The method as set forth in claim 3, wherein said command for requesting the re-sending of said specific contents information includes a parameter, said parameter being said information regarding said re-synchronizable contents information.

15 6. The method as set forth in claim 3, wherein said step c) includes the steps of:

c-1) extracting said specific information from said specific contents information re-sent from said contents provider server; and

c-2) re-synchronizing and reproducing said data read from said interactive optical disc  
20 and said re-sent specific contents information based upon the extracted specific information.

7. The method as set forth in claim 6, wherein said step c) further includes the step of receiving a command for notification of the re-sending of said specific contents information

from said contents provider server before said step c-1) is performed.

8. The method as set forth in claim 2, wherein said step b) includes the steps of:

b-1) if the sending of said contents information from said contents provider server is  
5 suspended or delayed, determining whether a size of contents information downloaded into a  
buffer memory of said interactive optical disc device and not reproduced yet is below a  
predetermined reference value;

b-2) automatically pausing a data reproducing operation of said interactive optical disc  
if the size of said contents information downloaded into said buffer memory and not reproduced  
10 yet is below said predetermined reference value; and

b-3) generating said command for requesting the re-sending of said specific contents  
information, with reference to said specific information contained in said normally reproduced  
last contents information, and sending the generated command to said contents provider server.

15 9. The method as set forth in claim 8, wherein said step b-3) includes the steps of:

b-3-1) checking said specific information contained in said normally reproduced last  
contents information;

b-3-2) calculating information regarding contents information subsequent to said  
normally reproduced last contents information based upon the checked specific information;

20 and

b-3-3) generating a command for requesting re-sending of specific contents information  
corresponding to the calculated information and sending the generated command to said  
contents provider server.

10. The method as set forth in claim 9, wherein said command for requesting the re-sending of said specific contents information includes a parameter, said parameter being said information regarding said contents information subsequent to said normally reproduced last contents information.

11. The method as set forth in claim 8, wherein said step c) includes the steps of:

c-1) receiving a command for notification of the re-sending of said specific contents information from said contents provider server;

c-2) after said re-sending notification command is received, extracting said specific information from said specific contents information re-sent from said contents provider server; and

- c-3) re-synchronizing and reproducing said data read from said interactive optical disc and said re-sent specific contents information based upon the extracted specific information.

12. A method for providing contents information in a contents provider server, comprising the steps of:

a) sequentially sending data packets containing contents information whose sending is requested by an interactive optical disc device connected via the Internet, and specific information regarding said contents information whose sending is requested;

b) if the sending of said requested contents information is suspended or delayed, receiving a command for requesting re-sending of specific contents information, from said interactive optical disc device; and

c) re-sending a data packet containing said specific contents information and specific information regarding it to said interactive optical disc device in response to said command.

13. The method as set forth in claim 12, wherein said sent contents information is audio data to be reproduced synchronously with video data read from an interactive optical disc in said interactive optical disc device.

14. The method as set forth in claim 12, wherein said specific information includes at least one of playback time information, contents information offset information, and offset information of data read from an interactive optical disc.

15. The method as set forth in claim 12, wherein said command for requesting the re-sending of said specific contents information includes a parameter, said parameter being information regarding said specific contents information.

16. The method as set forth in claim 15, wherein said step c) includes the steps of:

c-1) seeking a position of data corresponding to said information regarding said specific contents information;

c-2) sending a command for notification of the re-sending of said specific contents information to said interactive optical disc device; and

c-3) reading said specific contents information at said position and re-sending said data packet containing said specific contents information and said specific information regarding it to said interactive optical disc device.

17. A method for reproducing contents information in an interactive optical disc device, comprising the steps of:

a) downloading and managing offset table information from a contents provider server  
5 connected via the Internet;

b) synchronizing and reproducing contents information sent and downloaded from said contents provider server and data read from an interactive optical disc;

c) if the sending of said contents information from said contents provider server is suspended or delayed, generating a command for requesting re-sending of specific contents  
10 information, with reference to said offset table information, and sending the generated command to said contents provider server; and

d) reproducing said specific contents information re-sent from said contents provider server in response to said command together with data read from said interactive optical disc while re-synchronizing it with said data read from said interactive optical disc.

15 18. The method as set forth in claim 17, wherein said offset table information includes playback time information, offset information of said data read from said interactive optical disc and contents information offset information in a linked manner.

20 19. The method as set forth in claim 17, wherein said step c) includes the steps of:

c-1) extracting information regarding normally reproduced last contents information from said offset table information if the sending of said contents information from said contents provider server is suspended or delayed;

c-2) calculating information regarding re-synchronizable contents information based upon the extracted information; and

c-3) generating a command for requesting re-sending of specific contents information corresponding to the calculated information regarding said re-synchronizable contents information and sending the generated command to said contents provider server.

20. The method as set forth in claim 19, wherein said information regarding said re-synchronizable contents information is calculated with reference to a bandwidth of a current network bit rate.

21. The method as set forth in claim 19, wherein said command for requesting the re-sending of said specific contents information includes a parameter, said parameter being said information regarding said re-synchronizable contents information.

22. The method as set forth in claim 17, wherein said step d) includes the steps of:

d-1) receiving a command for notification of the re-sending of said specific contents information from said contents provider server; and

d-2) after said re-sending notification command is received, reproducing said specific contents information re-sent from said contents provider server together with said data read from said interactive optical disc while re-synchronizing it with said data read from said interactive optical disc.

23. The method as set forth in claim 17, wherein said contents information sent from

said contents provider server is audio data, and said data read from said interactive optical disc includes video data.

24. The method as set forth in claim 1, wherein said contents information sent from said  
5 contents provider server is audio data, and said data read from said interactive optical disc includes video data.

25. A method for providing contents information in a contents provider server,  
comprising the steps of:

- 10 a) sending offset table information regarding contents information whose sending is requested by an interactive optical disc device connected via the Internet;
- b) if the sending of said offset table information is completed, sequentially sending said contents information whose sending is requested by said interactive optical disc device;
- c) if the sending of said requested contents information is suspended or delayed,  
15 receiving a command for requesting re-sending of specific contents information, from said interactive optical disc device; and
- d) re-sending said specific contents information to said interactive optical disc device in response to said command.

20 26. The method as set forth in claim 25, wherein said sent contents information is audio data to be reproduced synchronously with video data read from an interactive optical disc in said interactive optical disc device.



27. The method as set forth in claim 25, wherein said offset table information includes playback time information, offset information of data read from an interactive optical disc and contents information offset information in a linked manner.

5           28. The method as set forth in claim 25, wherein said command for requesting the re-sending of said specific contents information includes a parameter, said parameter being information regarding said specific contents information.

29. The method as set forth in claim 28, wherein said step d) includes the steps of:

10           d-1) seeking a position of data corresponding to said information regarding said specific contents information;

            d-2) sending a command for notification of the re-sending of said specific contents information to said interactive optical disc device; and

            d-3) reading said specific contents information at said position and re-sending it to said  
15   interactive optical disc device.

30. A method for reproducing contents information in an interactive optical disc device, comprising the steps of:

            a) synchronizing and reproducing data read from an interactive optical disc and  
20   contents information sent and downloaded from a contents provider server connected via the Internet; and

            b) if a size of contents information downloaded into a buffer memory of said interactive optical disc device and not reproduced yet is smaller than or equal to a first predetermined

reference value or greater than or equal to a second predetermined reference value, sending a command for requesting adjustment of a contents information bit rate to said contents provider server.

5           31. The method as set forth in claim 30, wherein said step a) includes the steps of:

          a-1) over said Internet, attempting a connection to said contents provider server having said contents information to be reproduced synchronously with said data read from said interactive optical disc;

          a-2) generating a command for requesting sending of said contents information, based  
10       upon information necessary for the connection sent from said contents provider server, and sending the generated command to said contents provider server; and

          a-3) synchronizing and reproducing said contents information sent and downloaded from said contents provider server in response to said sending request command and said data read from said interactive optical disc.

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          32. The method as set forth in claim 31, wherein said information necessary for the connection sent from said contents provider server includes an Internet protocol (IP) address and port number of said contents provider server.

20           33. The method as set forth in claim 30, wherein said command for requesting the adjustment of said contents information bit rate includes a parameter, said parameter being an available memory size of said buffer memory.

34. A method for providing contents information in a contents provider server,  
comprising the steps of:

a) sequentially sending contents information whose sending is requested by an interactive  
optical disc device connected via the Internet; and

5        b) if a command for requesting adjustment of a contents information bit rate is received  
from said interactive optical disc device, adjusting the bit rate in response to the received  
command and sending the requested contents information at the adjusted bit rate.

35. The method as set forth in claim 34, wherein said step a) includes the steps of:

10        a-1) if a connection from said interactive optical disc device is attempted over said  
Internet, sending information necessary for the connection to said interactive optical disc device;  
and

15        a-2) if a command for requesting sending said contents information is received from said  
interactive optical disc device, sequentially sending said contents information whose sending is  
requested by said interactive optical disc device.

36. The method as set forth in claim 35, wherein said information necessary for the  
connection includes an IP address and port number of said contents provider server.

20        37. The method as set forth in claim 34, wherein said command for requesting the  
adjustment of said contents information bit rate includes a parameter, said parameter being an  
available memory size of a buffer memory of said interactive optical disc device.

38. The method as set forth in claim 37, wherein said step b) includes the steps of:

b-1) if said command for requesting the adjustment of said contents information bit rate is received from said interactive optical disc device, calculating a new bit rate in consideration of said parameter of said command, a current bit rate and a play speed of said contents information;

5 and

b-2) sending said contents information at the calculated bit rate.